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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,599	08/03/2003	Hung-Hui Ho	REAP0018USA	1598

27765 7590 05/09/2006

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EXAMINER

LUU, MATTHEW

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/604,599	HO ET AL.	
	Examiner	Art Unit	
	LUU MATTHEW	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 21-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The new limitation added to claims 21 and 31 “and both of the target color element and the color element of the output color relate to the same component, that is the R, G, or B component” was not described in the specification as originally claimed.

Dependent claims are also rejected for incorporating the defects from their respective parent claims by dependency.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 21-28, 30-38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2003/0234795) in view of Champion et al (6,774,953).

Regarding independent claims 21 and 31, Lee discloses (Fig. 3) a color conversion apparatus for converting an input color being in a first color space (Y, V, U) to an output color being in a second color space (R, G, B), wherein both the input color and the output color include a plurality of color elements, the apparatus comprising:

a first look-up table (LUT) (301) being coupled to a first color element (Y) of the input color for outputting a corresponding first converted color element;

a second LUT (303) being couple to a second color element (V) of the input color for outputting a corresponding second converted color element; and

an adder circuit (Adders- R, G and B) (311, 315 and 317) being coupled to the first LUT (301) and the second LUT (303) for summing the first converted color element, the second converted color element, and a target color element (U) to thereby generate a color element of the output color (R, G, or B); and both of the target color element (U) and the color element of the output color (R, G, or B) relate to the same component, that is the R, G, or B component. See sections 51-56.

The only difference between the disclosure of Lee and the claimed invention is that claims 21 and 31 require both of the input color and the output color are in RGB format, instead of (YVU) to (RGB) formats as taught by Lee.

However, Champion discloses (Fig. 2) a conventional color conversion apparatus for converting an input color being in a first color space (R' , G' , B') (709) to an output color being in a second color space (R' Laser, G' Laser, B' Laser), wherein both the input color and the output color are in (RGB) format.

Champion further discloses (Fig. 3) a first LUT (306), a second LUT (320), and an adder circuit (316) being used in the color conversion apparatus for converting the input color in (R' , G' , B') format to the output color in (R' Laser, G' Laser, B' Laser) format, wherein both the input color and the output color are in (RGB) format.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the RGB format conversion apparatus with the LUTs and the adder circuit of Fig. 3 of Champion, into the color conversion apparatus of Lee to provide a color conversion apparatus using the look-up-tables (LUTs) to significantly reduce the computation and memory requirements in the color transformation process, as suggested by Champion (Column 2, lines 58-61).

Furthermore, whether converting a (YUV) color format to a (RGB) format, or converting a (RGB) format to another (RGB) format, is an obvious design choice, since it only depends on the desired types of color reproduction devices being used. For example, different types of color reproduction devices, such as CRT monitor or an LCD display device, will have different color-reproducing characteristics, called color spaces. Therefore, the input color space (RGB or YUV) is only dependent on the input source

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being used. And the output color space (RGB or YUV) is only dependent on the reproduction devices at the output.

Furthermore, Champion also discloses (Fig. 2) a well-known color conversion apparatus for converting an input color being in a first color space (R' , G' , B') (709) to an output color being in a second color space (R' Laser, G' Laser, B' Laser), wherein both the input color and the output color are in (RGB) format.

Regarding claims 22 and 32, note the rejection as set forth above with respect to claims 21 and 31.

Lee fails to teach a gamma correction circuit coupled to a third color element of the input color for generating a gamma corrected (target) color element.

However, Champion discloses (Fig. 2) a gamma circuit (Gamma LUT, 208) coupled to all of three-color elements (R , G , B) for generating the gamma corrected color elements ($R'L$, $G'L$ and $B'L$). See column 5, lines 13-15; and column 9, lines 50-52.

Therefore, it would have been obvious to a person of ordinary skill in the art to use the gamma correction circuit (208) of the color conversion system of Champion into the color conversion system of Lee to provide the best quality output color elements for the best quality pictures.

Regarding claims 23 and 33, Lee discloses (Fig. 3) the adder circuit (311, 315 and 317) is further coupled to a third color element (U) to thereby generate a temporary color element (any of the R, G and B color components).

Regarding claims 24 and 34, Champion discloses (Fig. 2) a gamma circuit (Gamma LUT, 208) coupled to all of three color elements (R, G, B) for generating the gamma corrected color elements (R' Laser, G' Laser and B' Laser). See column 5, lines 13-15; and column 9, lines 50-52.

Regarding claims 25 and 35, Champion further discloses (Fig. 3) the first LUT (306) maps a plurality of values (308) for the first color element; and the second LUT (320) maps a plurality of values (322) for the second color element (Column 7, lines 17-60).

Regarding claims 26 and 36, Champion discloses (Fig. 4) the output value (second color space) for each element (R, G, B) is calculated using 8 values of the input color space (Column 5, lines 44-54).

Regarding claims 27-28 and 37-38, Champion discloses (Fig. 3) the LUT is indexed using a number of bits of the values of the first color space; The LUT is indexed using the five most significant bits of the values of the first color space (Column 5, lines 50-65).

Regarding claims 30 and 40, Lee discloses (Fig. 1) a LCD device (115).

Claim Rejections - 35 USC § 103

Claims 29 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claims 21 and 31 above, and further in view of Acharya (6,694,061).

Lee fails to disclose a plurality of sub-tables.

However, Acharya teaches the LUTs that have three separate sub-tables (Column 6, lines 35-37).

It would have been obvious to the person of ordinary skill in the art to use the three sub-tables, one for each component, into the color conversion system Lee to provide an equal number of bits for each color components in order to facilitate the color conversion process.

Response to Arguments

Applicant's arguments filed March 14, 2006 have been fully considered but they are not persuasive.

Regarding to the Applicant's argument on page 7, Lee discloses (Fig. 3) an adder circuit (Adders- R, G and B) (311, 315 and 317) being coupled to the first LUT (301) and the second LUT (303) for summing the first converted color element, the

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second converted color element, and a target color element (U) to thereby generate a color element of the output color (R, G, or B); and both of the target color element (U) and the color element of the output color (R, G, or B) relate to the same component, that is the R, G, or B component. See sections 51-56.

The only difference between the disclosure of Lee and the claimed invention is that claims 21 and 31 require both of the input color and the output color are in RGB format, instead of (YVU) to (RGB) formats as taught by Lee.

However, Champion discloses (Fig. 2) a conventional color conversion apparatus for converting an input color being in a first color space (R', G', B') (709) to an output color being in a second color space (R' Laser, G' Laser, B' Laser), wherein both the input color and the output color are in (RGB) format.

Champion further discloses (Fig. 3) a first LUT (306), a second LUT (320), and an adder circuit (316) being used in the color conversion apparatus for converting the input color in (R',G', B') format to the output color in (R' Laser, G' Laser, B' Laser) format, wherein both the input color and the output color are in (RGB) format.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have

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been obvious to a person of ordinary skill in the art at the time of the invention to use the RGB format conversion apparatus with the LUTs and the adder circuit of Fig. 3 of Champion, into the color conversion apparatus of Lee to provide a color conversion apparatus using the look-up-tables (LUTs) to significantly reduce the computation and memory requirements in the color transformation process, as suggested by Champion (Column 2, lines 58-61).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUU MATTHEW whose telephone number is (571) 272-7663. The examiner can normally be reached on Flexible Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JACK KEITH can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. Luu

A handwritten signature in black ink, appearing to read 'Matthew Luu', with a stylized flourish at the end.

**MATTHEW LUU
PRIMARY EXAMINER**